

Nuclear Power: A Government View

***Society of Environmental Journalists
Annual Conference
Nuclear Energy Panel***



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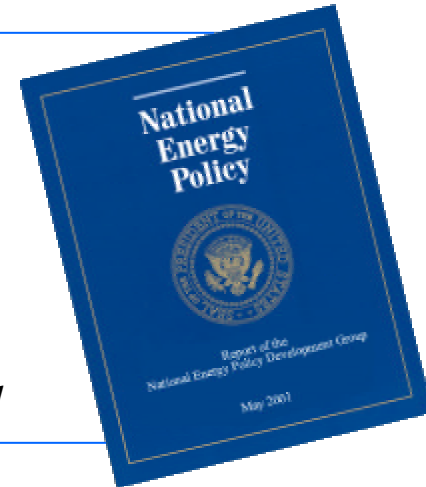
October 10, 2002



The U.S. National Energy Policy and Nuclear Power

“The NEPD Group recommends that the President support the expansion of nuclear energy in the United States as a major component of our national energy policy.”

Report of the National Energy Policy Development Group, May 2001



Calvert Cliffs Nuclear Power Plant

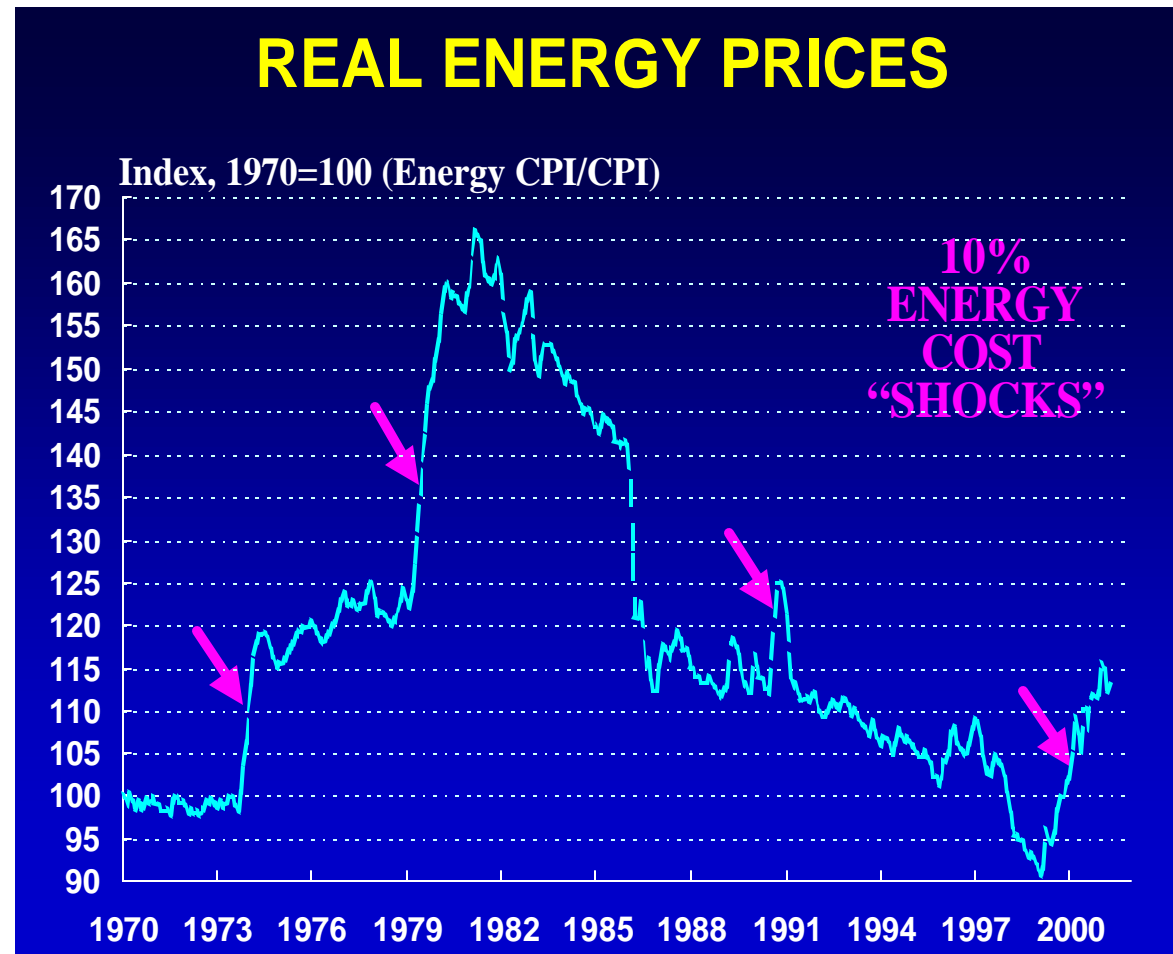
Recommendations:

- Support expansion of nuclear energy in the United States
- Develop advanced nuclear fuel cycles and next generation technologies
- Develop advanced reprocessing and fuel treatment technologies



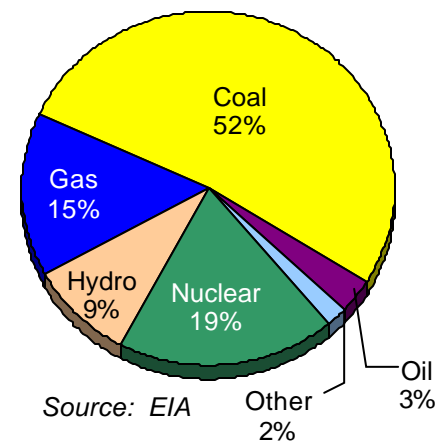
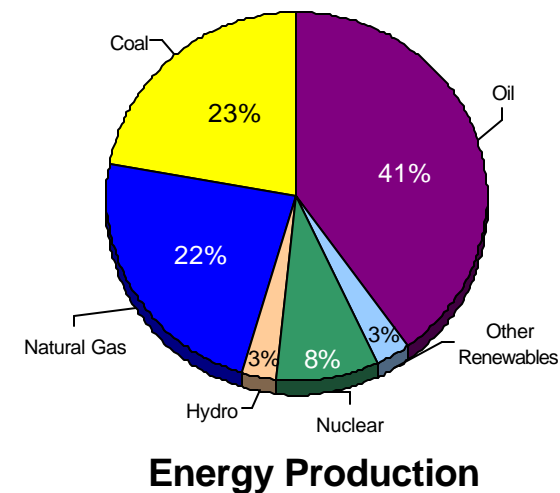
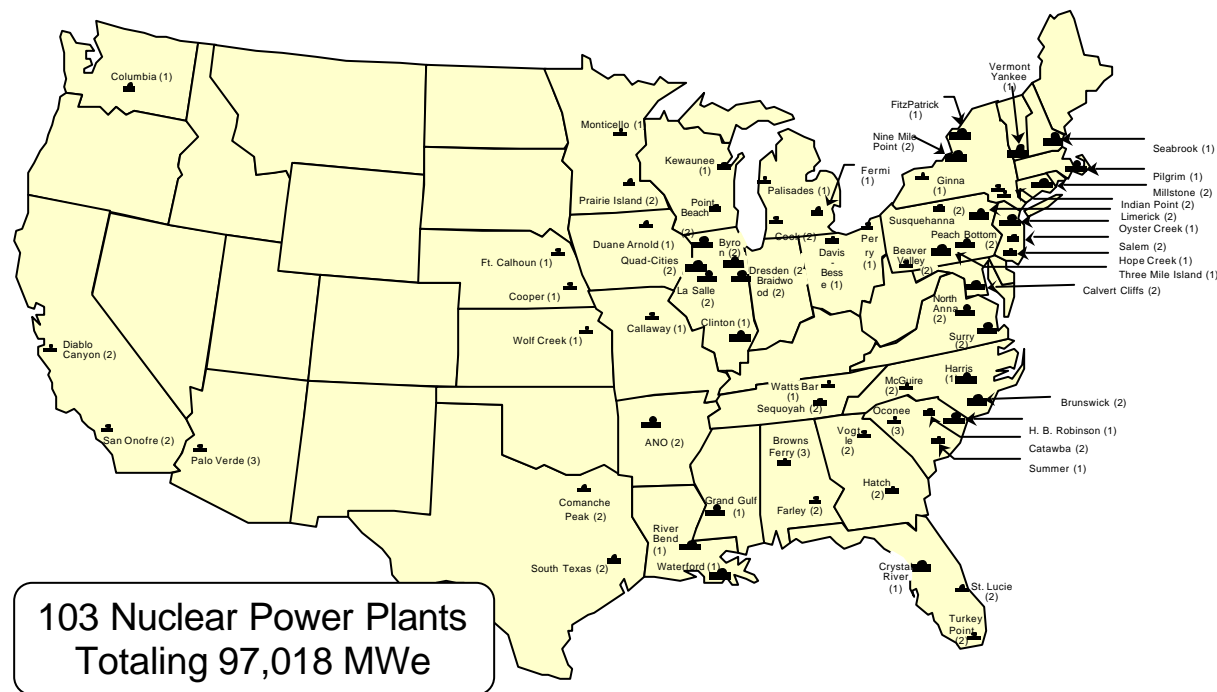
Energy security *it is more important than ever*

- All major economic downturns were preceded by energy supply disruptions and resultant price shocks
- Energy shortages have a significant impact on economic stability and growth





Why Nuclear Energy? we depend on it today





Why Nuclear Energy? ... it is an energy option we cannot ignore

• Oil:

- U.S. imports 51% of its oil supply
- Vulnerable to supply disruptions and price fluctuations

• Natural Gas:

- Today's fuel of choice
- Future price stability?

• Coal:

- Plentiful but polluting

• Renewables:

- Capacity to meet demand?
- Still expensive

• Nuclear:

- Proven technology
- Issues remain

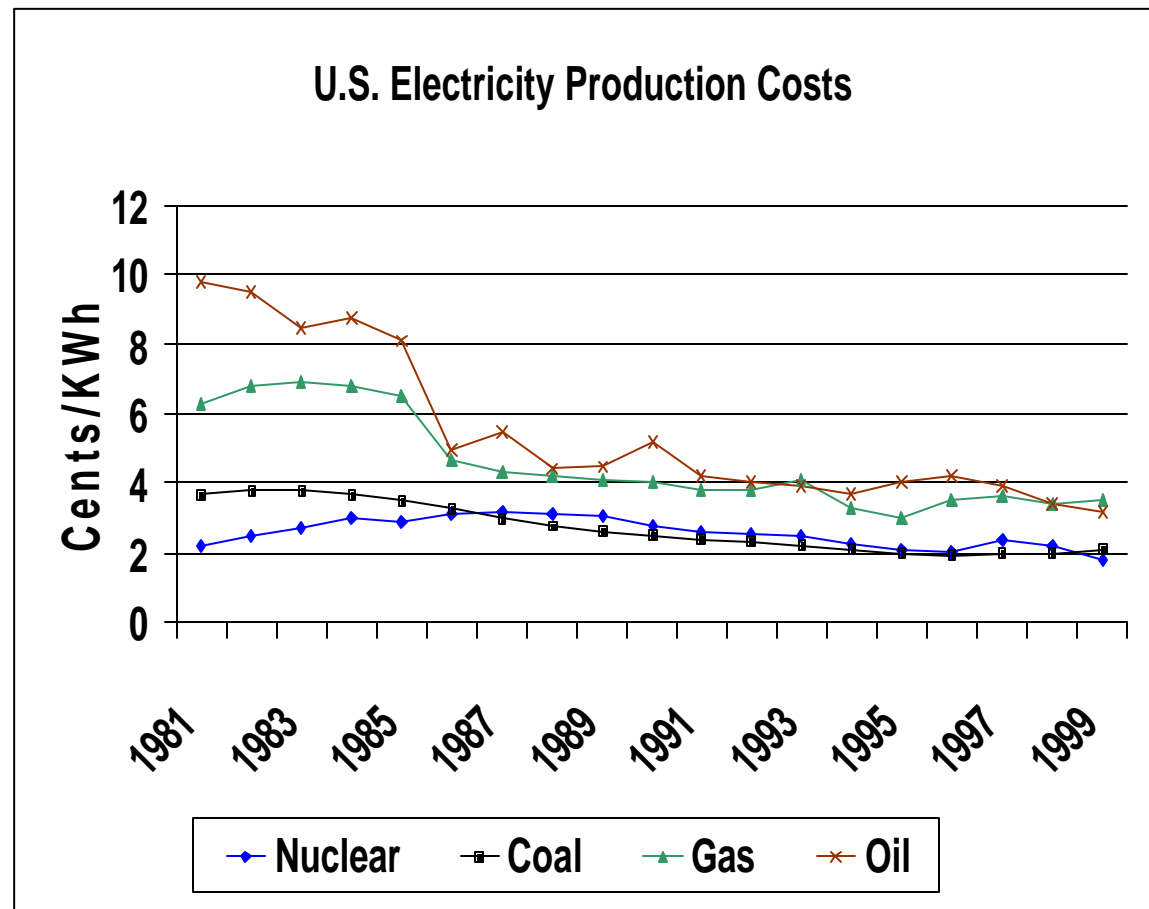
Energy Source	% of U.S. Electricity Supply	% of U.S. Energy Supply	% Imported
Oil	3	39	51
Natural Gas	15	23	16
Coal	51	22	0
Nuclear	20	8	0
Hydroelectric	8	4	0
Biomass	1	3	0
Other Renewables	1	1	0

Source: Energy Information Administration



Why Nuclear Energy? ... *nuclear energy is affordable*

- U.S. nuclear power plants have achieved low operating costs
- Currently operating -- and perhaps unfinished -- nuclear plants are attractive in today's market

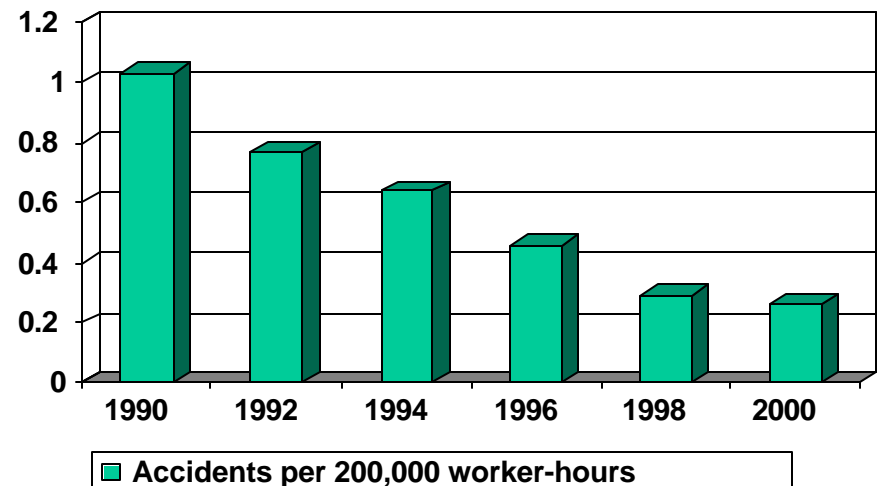
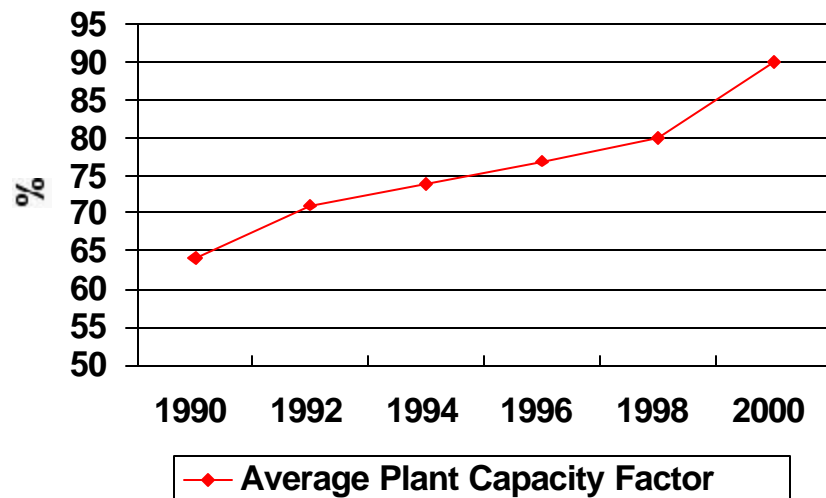


Source: Utility Data Institute



Why Nuclear Energy? ... *plant safety and performance have steadily improved over the past 20 years*

- Excellent plant management and operational experience
- Well-developed safety culture and effective regulation

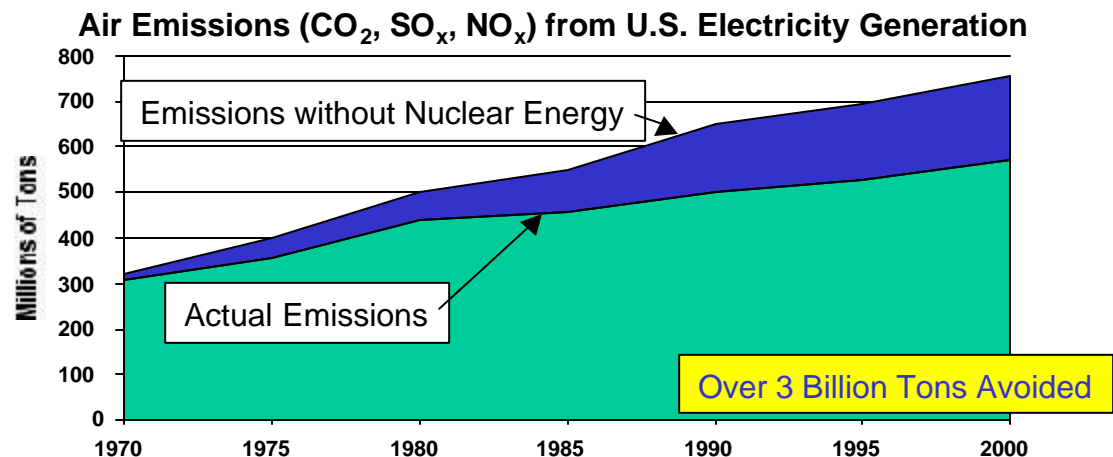
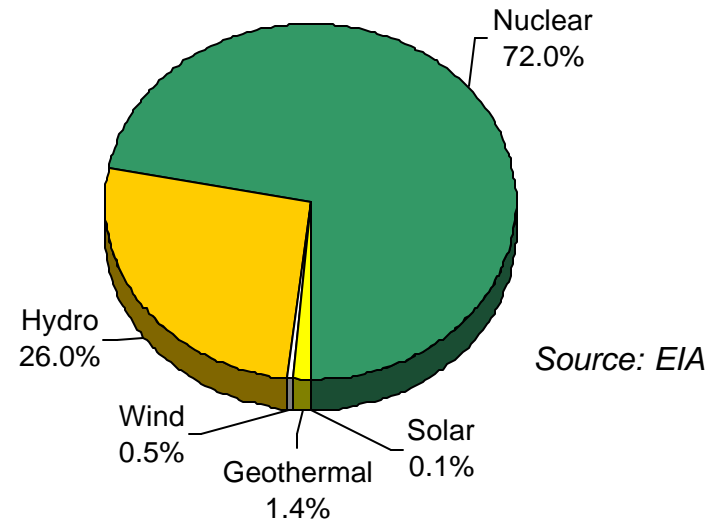




Nuclear Power Is Helping Today

• Cleaner Air

- Emission-free generating sources supply almost 30 percent of America's electricity
- Nuclear energy provides the greatest share of clean energy -- almost three quarters
- In the U.S., nuclear power avoids about 175 MMTC each year

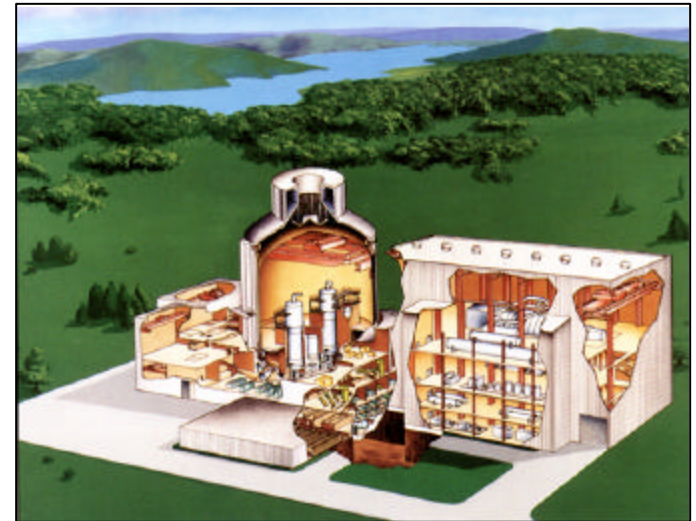


Sources: Nuclear Energy Institute, EPA, and EIA



And Nuclear Power Can Help Tomorrow

- **Reliable, domestic base-load energy**
- **No carbon emissions**
- **Sustainable, long-term energy supply**
- **Supports use of advanced energy infrastructures to**
 - Increase the efficient use of energy
 - Reduce overall environmental impacts
 - Deal with transportation fuel needs through production of hydrogen





Can We Build New U.S. Reactors By 2010?

Yes!

Can Be Deployed by 2010

- ABWR (General Electric)

Probably Can Be Deployed by 2010

- AP600 (Westinghouse)
- AP1000 (Westinghouse)
- PBMR (Eskom)

Possibly Can Be Deployed by 2010

- SWR-1000 (Framatome)
- ESBWR (General Electric)
- GT-MHR (General Atomics)

Cannot Be Deployed by 2010

- IRIS (Westinghouse)

2010

Conclusions of the Expert Study: A Roadmap to Deploy New Nuclear Power Plants in the United States by 2010





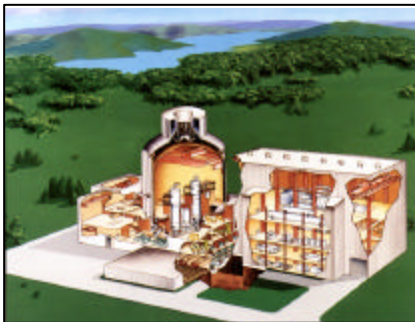
But More Work Must Be Done

Early Site Permit Application



- Complete DOE/Industry Scoping Studies
- Launch Cooperative Demonstration of ESP process

Research and Development and Design Certification



- R&D on First-of-a-Kind Engineering
- Material, Component, and Fuel Testing

Combined Construction and Operating License Application



- Conduct DOE/Industry cost-shared licensing demonstration

Advanced Nuclear Power Systems Online by 2010



- ALWRs
- Gas-cooled reactors

For new U.S. Nuclear Power Plants to be a reality by 2010, DOE must support key R&D and cooperate with industry to demonstrate untested NRC processes



The Longer-Term Future: Generation IV

DOE is leading the Generation IV International Forum

- Formal, chartered organization of Governments
- Developing GEN IV Technology Roadmap
- Conduct collaborative nuclear R&D to pool resources



The Generation IV Technology Roadmap will:

- Identify 6 to 8 most promising technologies
- Establish clear R&D plans
- Enable deployment of GEN IV systems after 2010 but before 2030



U.S.A.



United Kingdom



Switzerland



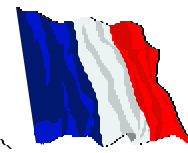
South Korea



South Africa



Japan



France



Canada



Brazil



Argentina



Also Long-Term: *Hydrogen From Nuclear Power*

Nuclear has already largely displaced oil for electricity generation

In the future, H₂ produced by nuclear can reduce oil use for transportation and dramatically reduce our reliance on foreign oil imports

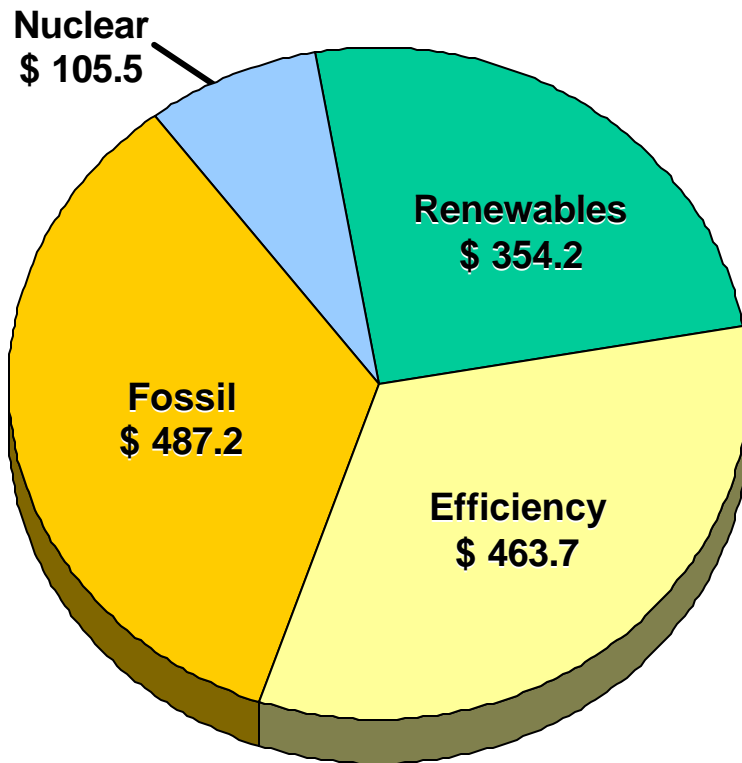


One nuclear fuel pellet could make enough hydrogen for 25,000 cars to go 100 miles



DOE is Revitalizing its Exploration of Nuclear Power

FY 2002 DOE Energy R&D Funding
(\$ in millions)



- DOE nearly eliminated its nuclear energy R&D funding in 1998
- Today, we are rebuilding our nuclear R&D effort - with significant industrial and international partnerships
- However, nuclear remains only one of the energy R&D areas we are exploring



www.nuclear.gov